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ABSTRACT

The belief that each citizen should have some understanding of the natural world with its complex balances and should accept responsibility for man's influence upon the world serve as the primise for this report. Suggestions offered for comprehensive planning and a statewide approach to environmental education are made on the basis that Alabama has no coordinated program for environmental education either for students or adults, no statewide curriculum has been developed, nor has a comprehensive adult program been formulated. Consequently, the Alabama Environmental Education Advisory Council has prepared this bulletin emphasizing environmental education in schools and environmental awareness on the part of the public. Topics considered are (1) The Status of Environmental Education, (2) Goals and Objectives of Environmental Education, (3) Environmental Education Curriculum Development, (4) Outdoor Learning Centers: Simple and Complex, (5) Environmental Education Centers, (6) The Role of Higher Education in Environmental Education, (7) Public Awareness, and (8) Resources Available. To provide stimulus for planning, individual projects already underway are briefly noted in the appendix. (BL)

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# ENVIRONMENTAL EDUCATION IN ALABAMA

## A COMPREHENSIVE APPROACH

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# ENVIRONMENTAL EDUCATION IN ALABAMA—

# A COMPREHENSIVE APPROACH

LeRoy Brown

State Superintendent of Education

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Basic Sciences—Environmental Education

State of Alabama
Department of Education
Montgomery

Bulletin No. 17
1973

"The basic causes of our environmental troubles are complex and deeply imbedded. It is obvious that we cannot correct such deep-rooted causes overnight. Our educational system has a key role to play in bringing about this reform. . ."

Richard Nixon
President of the United States

"I truly believe that we in this generation must come to terms with nature, and I think we are challenged as mankind has never been challenged before, to prove our maturity and mastery, not of nature, but of ourselves."

Rachel Carson

Written and edited by members of the Environmental Education Advisory Council

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## FOREWORD

Today, more than ever before, it is necessary to develop a functional statewide approach to environmental education. Such an approach should promote among school-age youth, education leaders, and all other members of society, an understanding of the environment, their relation to it, and the concern and the action necessary to improve the quality of life and to assure survival.

The State of Alabama fortunately still is a relatively bountiful land in terms of water resources, timber resources, and other natural assets. This is not to say that some environmental deterioration has not occurred; but generally speaking, the State of Alabama has not been as seriously affected with environmental pollution as have some sections of the country.

Alabama is experiencing a period of growth with an influx of new industries signalling an era of prosperity. Undeveloped land, abundant water, and other natural advantages have stimulated this industrial advance. Alabama welcomes this growth, yet precautions must be taken to insure that the environment is not misused. Overdevelopment has sometimes produced conditions that could best be described as environmental collapse. This must not happen in Alabama. If the citizens are well informed, it will not happen.

Alabama will benefit from environmental education and public awareness that instill in each individual respect for the balances in nature and the commitment necessary to maintain it. This will be the approach to environmental education and public awareness within the State of Alabama. This is a broad plan, comprehensive in scope; it depends upon the joint efforts of many organizations, agencies, and groups for its successful implementation.

LeRoy Brown
State Superintendent of Education

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# STATUS OF ENVIRONMENTAL EDUCATION

Environmental deterioration has been under way to some degree since the dawn of civilization, but it has accelerated since the beginning of the industrial revolution. Recognition of those phenomena has been hastened by a series of incidents such as pollution episodes that cause illness and death, massive fish kills, and the discovery of high-level radioisotope and pesticide residues in milk and animal tissue, to name a few. The refinement of analytical technology which permits the measurement of mere traces of pollutants has magnified public concern.

In Alabama there is widespread concern about problem areas that threaten environmental balance. Birmingham, for example, received national attention when monitors recorded extremely high particulate counts in the atmosphere. Mobile Bay, emptying into the Gulf of Mexico, is seriously polluted, with widespread damage to oysters and other aquatic life. Fish kills occur throughout the state as cities and manufacturing plants dump refuse into streams and as toxic wastes find their way into rivers and bays. Alabamians are concerned about these conditions and are eager to correct them. Concerned leaders are eager to promote a program of environmental awareness and education that will insure reduction and eventual prevention of damage.

For decades, such agencies as the Alabama Department of Conservation and Natural Resources and the State Board of Health have worked with the U. S. Department of Interior, U. S. Department of Public Health Service, and U. S. Department of Agriculture to improve environmental controls affecting water, land, and air. Alabama's Air Pollution Control Law, passed in 1971, is among the most comprehensive adopted by any state. It provides penalties in case of noncompliance, establishes a monitoring network, and provides for emergency action when

excessive pollution threatens health. A new Water Pollution Control Law, also passed in 1971, is coordinated with provisions of the 1972 Federal Pollution Control amendments and related laws.

Alabama's parks and forests attract residents and tourists to their varied recreation facilities. In many private woodlands, the public is invited to hunt, fish, and hike. Federal developments provide additional recreational facilities. Overuse and misuse of all these facilities are creating serious environmental problems.

In 1970 the State Department of Education requested that representatives from the Alabama Department of Conservation and Natural Resources, State Board of Health, State Department of Agriculture and Industries, Alabama Development Office, the American Association of University Women, and other interested individuals assist the department in revising its environmental curriculum. Representatives from the agencies responded, and during the fall of 1970 this Interagency Council on Environmental Education began its work.

It seemed desirable to involve wider public participation and to rename the committee the Environmental Education Advisory Council. This bulletin is the result of the Council's effort and is a two-prong thrust combining environmental education in schools and environmental awareness on the part of the public. The premise is that each citizen should have some understanding of the natural world with its complex balances and should accept responsibility for man's influence upon the world.

Alabama has no coordinated program for environmental education either for students or for adults. Although many interested and ingenious individuals have initiated local projects, no statewide curriculum has been developed, nor has a comprehensive adult program been formulated. Some of the individual projects are briefly noted in the appendix. These and other such efforts provide stimulus for more comprehensive planning.

# GOALS AND OBJECTIVES OF ENVIRONMENTAL EDUCATION

**Definition**

Environmental education deals with man's relationship to his natural and man-made environments.

**Goals**

Environmental education strives to develop citizens who are:

1. **Aware** of man's environment and of problems related to this environment.
2. **Knowledgeable** concerning possible alterations for dealing with environmental problems.
3. **Motivated** to undertake actions aimed at maintaining and improving the quality of the environment.

**Objectives**

1. Develop competent professional educators in the environmental area at state and local levels.
2. Build environmental principles and facilities into both formal and nonformal education programs.
3. Establish a broad base of support for the entire environmental education program.
4. Develop techniques for disseminating pertinent environmental information.
5. Strive for achieving a coordinated effort in environmental education among all agencies and organizations—federal, state, public, and private.

**Recommendations Relative to Objectives**

1. Establish a state clearinghouse for environmental education resources with regional distribution offices.
2. Appoint a state consultant in the Alabama State Department of Education with a broad environmental knowledge to work with administrators, teachers, and citizens.
3. Develop an interdisciplinary environmental instruction program for all levels from kindergarten through high school.
4. Initiate preservice and inservice teacher and administrative environmental education programs.
5. Encourage colleges and universities to develop environmental education curricula for:
   a. Students in general studies areas, as well as students in education.
   b. Students in technical environmental management.
6. Require environmental education for elementary and secondary certification.
7. Encourage establishment of minimum standards in environmental education for local school systems.
8. Develop and encourage the use of materials pertinent to environmental education.
9. Prepare and distribute lists of available facilities and resources for environmental education.
10. Identify constraints that discourage environmental education programs and attempt to minimize them.
11. Encourage achievement goals and evaluations.
12. Develop a Speaker's Bureau of people knowledgeable in the environmental and related fields.
13. Strive to coordinate formal and nonformal programs.

# ENVIRONMENTAL EDUCATION CURRICULUM DEVELOPMENT

Alabama has a number of schools and teachers involved in environmentally oriented programs; however, members of the Environmental Education Advisory Council and the State Department of Education, as well as other leaders in education, believe that if future generations are to be provided with the knowledge and skills necessary to make and implement environmental decisions, our schools must embark on a comprehensive interdisciplinary education program that will permeate the entire curriculum from kindergarten to college. The Environmental Education Advisory Council members believe that the planning, writing, and implementing of such a curriculum is a step in the right direction. With the help of many citizens, educators, scientists, and civic leaders, a coordinated program can be developed to include all students from kindergarten to college. Such a program should be built on a thorough grounding in basic ecological principles and must develop an understanding of the difficult and complex choices that must be made.

**Objectives**

1. To develop an interdisciplinary curriculum with emphasis placed in the natural, physical, and social science areas. The sequential interdisciplinary curriculum will be adapted to the maturation level of the learners.
2. To develop a curriculum that is designed to:
   a. Assist teachers and students in obtaining a clear understanding that man lives in a symbiotic relationship with his environment;
   b. Encourage teachers to involve students in experi-

ences which will increase their understanding of the interrelations of diverse ecosystems and natural resources;

c. Suggest experiences which will involve students in decision-making skills required to cope with specific environmental problems;

d. Suggest activities that will involve both students and members of the community in combating environmental problems.

3. Encourage wide distribution and discussion of the state environmental curriculum.

4. Identify and prepare teams of local educators, resource people, and curriculum directors to train teachers in the use of the curriculum materials at all grade levels.

**Content**

The curriculum outline, to be written by a task force assisted by staff members of the State Department of Education and other educators knowledgeable and active in environmental problems, should be available to Alabama teachers in the fall of 1973. During the 1973-74 session it will be tested, evaluated, and revised in order to implement the entire program by fall of 1974.

The curriculum guide will suggest an approach to the teaching of environmental education as an integral part of the other subject matter areas at all levels of education. The guide should benefit all school personnel as they attempt to increase their knowledge of the principles of environmental education and expand their efforts to put these important principles into practice.

**Characteristics of the Curriculum, Kindergarten to College**

1. Reinforcement of responsibility to maintain and improve the environment

2. Total student involvement

3. Open-end investigations

4. Experiences on all levels
5. Experiences that utilize the basic learning skills in environmental encounters
6. Interdisciplinary activities
7. Use of school and community resources

**Guidelines to Be Used in the Development of Curriculum**

1. Cooperative effort involving students, teachers, principals, supervisors, parents, and other citizens in the community.
2. First work-team, June, 1973, will attempt to:
   a. assess needs
   b. establish goals
   c. determine objectives
   d. select minimum curriculum content.
3. Adapt materials to stages of student development.
4. Suggest strategies to provide for individual needs.
5. Use the help of a wide variety of persons in the entire planning of the environmental education program, including representatives from all levels of education, industry, agriculture, and other community groups.
6. Search for innovative and inexpensive programs and materials that utilize local resources, both human and physical.
7. After use, teachers will develop evaluation techniques for incorporation in their specific objectives.

**Summary**

Environmental education depends upon understandings, education, research, technical assistance, and actions; to be really effective, its principles must become part of the thinking of the total citizenry. The preparation of a curriculum is one step in this direction.

# OUTDOOR LEARNING CENTERS: SIMPLE AND COMPLEX

Outdoor learning centers are a necessary part of any environmental education program. While it is necessary that students learn basic ideas and principles concerning the environment in the classroom setting, there is much that can be learned and observed in a natural setting. Experiences that students gain in the out-of-doors can be achieved in no other way.

**Purpose**

I. To identify those areas which permit opportunity for individuals to explore various environments

II. To establish and maintain those places and processes whereby the individual may gain knowledge of ecological principles

III. To apply ecological knowledge toward change in attitudes, values, and behavior to foster commitment to improving the environment

Outdoor learning centers from the simplest to the most complex, should have the following characteristics:

They must

1. Be legally accessible
2. Be physically acceptable
3. Have some method of use control
4. Be of size adequate for the use of the group
5. Have some method of maintenance including trash removal

6. Be free from unusual hazards

7. Have interpretive information in some form

8. Have provisions for use by the handicapped.

Obviously, not all of these criteria will apply to all identified outdoor areas; but certainly all would apply to the complex areas.

Three types of centers are proposed varying from simple to comprehensive: the classroom site, the school system site, and the county or planning district site.

I. The Classroom Site

Characteristics:

A. Can be reached and used within a single classroom period

B. Need not be permanent

C. Requires little or no maintenance

D. Is capable of being used for a single classroom period study unit

E. Is ecologically simple; may illustrate favorable or unfavorable environmental influences

F. Is operable by a single teacher without administrative supervision

Suggested Examples:

1. Window box
2. Sidewalk
3. Birdbath or feeder
4. Playground
5. School lawn
6. Hillside, borrow pit, ditch, gulley or roadcut
7. Rock garden
8. Tree or forest

9. Flowerbed
10. Wall, fencerow, or building foundation
11. Pond, puddle, creek, or bog
12. Vacant lot, abandoned car or buildings, fields, and trash piles
13. Billboard and sign
14. Beach
15. Outdoor water drain or faucet

II. School System Site Characteristics:

A. Can be reached and used within a single school day

B. Needs to be semi-permanent, providing at least enough continuity to permit applying developed lesson plans, refined over a period of years

C. Has relatively long-term maintenance available and includes access to sanitary facilities

D. Is capable of being used for a continuing study unit

E. Preferably includes more than one type of biotic community

F. May require cooperative administration by several persons or agencies

G. Permits use by several disciplines but does not require unusual or sophisticated interpretation

H. Permits use of interpretive information of a semi-permanent nature, which may be supplied by teachers or project leaders

Suggested Examples:

1. Nature trails
   a. Hiking

b. Bicycle trail

c. Canoe trail

2. Plant material centers and horticultural departments

3. Sites such as waterways, locks, and dams

Sites identified or designated for single classroom use might be expanded and developed for use of the entire school or school system. Obviously, additional space or facilities will be necessary, as will a degree of permanence and provision for maintenance.

III. The County or Planning District Site Characteristics:

A. Can be reached and used within a single day or weekend

B. Needs to be permanent

C. Requires maintenance from a permanent agency

D. Is capable of being used for a continuing study unit

E. Preferably includes several types of biotic communities

F. Is administered by a permanent agency, committed to long-term designation of the area as an outdoor learning center. Other simultaneous uses are not precluded

G. Permits use by many disciplines. Does not require unusual or sophisticated interpretation but invites more complex interpretation than Site II

H. Has sanitary facilities, emergency communications, and shelter for use in inclement weather

I. Has various types of interpretive signs or materials, many of them of a permanent and perhaps detailed nature

Suggested Examples:

1. School-owned or school-administered outdoor areas
2. State agency open space areas: i.e., State Parks, State Forests, game management areas, fishing ponds, lakes, State Historical Commission sites, county school lands
3. National agencies: National Forests, National Parks or National Recreation Parks, National Wildlife Refuges, i.e., U. S. Corps of Engineers (public use areas in waterway development areas as well as those more restricted in nature) TVA use area
4. County parks, disposal sites, forests, wetlands, development areas
5. Soil conservation projects
6. Industrial development
7. Public or semi-private areas such as zoos and arboreta

**Recommendations**

1. That no priority on outdoor learning centers, levels I, II and III, be established, but that work be started toward implementing the **three levels simultaneously,** since different groups will be responsible for the implementation of different type areas
2. That an attempt be made to establish by 1975 at least one level III, resident, outdoor center to serve as a prototype with permanent staff administered by the state
3. That an inventory of sites available for both level II and level III outdoor learning centers be made and distributed
4. That an inventory of resource persons to aid teachers in developing level I (classroom sites) and level II (school district sites) be compiled and distributed statewide
5. That the outdoor training center for county or district use be available also as an environmental resource center where such provision seems desirable and feasible

## ENVIRONMENTAL EDUCATION CENTERS

Environmental Education Centers complement an overall plan for environmental education and will:

1. Develop and disseminate curricula aimed at preserving and enhancing environmental quality;
2. Encourage preservice and inservice training programs including institutes, workshops, symposia and seminars concerned with the teaching of environmental education;
3. Plan for outdoor learning centers, simple and complex;
4. Prepare and distribute materials on topics relating to environmental quality;
5. Coordinate environmental education activities within the state;
6. Promote and assist school/community cooperation in environmental education activity that goes beyond K-12;
7. Serve as a model demonstration site for schools, both in program and physical facility;
8. Encourage, initiate, and coordinate research and development activities in environmental education curriculum at local levels;
9. Conduct ongoing evaluation of environmental education programs in the state and direct the results of these evaluations to the State Department of Education for consideration;

10. Assist local schools in implementing their various environmental education programs.

The center should be staffed and operated by the State Department of Education or other public agencies. It should be located near the geographic center of a region that has relatively wide distribution of population.

Specifically, the Environmental Education Center functions as a repository of all available information relevant to environmental education. It operates as a continuing process to keep abreast of activities and programs. This includes storing and cataloging printed and audiovisual material from public and private sources. The Center should be open to the public. It should provide information regarding outdoor learning centers and should aid in scheduling use of facilities.

In short, the Center should serve as a clearinghouse on environmental information for both professional educators and the public. It should make available, in a single location, materials relevant to environmental education.

# THE ROLE OF HIGHER EDUCATION IN ENVIRONMENTAL EDUCATION

Institutions of higher education share in the overall responsibility of providing an environmental education program for the State of Alabama. Through instructional programs, institutions of higher education should provide courses in general studies, professional studies, and career education as well as be involved in the development of curriculum materials.

1. Environmental Education in General Studies: Basic concepts of environmental education to be included in survey courses in the social sciences, natural sciences, and humanities at the undergraduate level in junior colleges and universities in the State of Alabama

   Minimal implementation: A single course in environmental education incorporating concepts from the various disciplines. Courses presently being offered might well be restructured to meet this criteria.

   Desired implementation: Continued emphasis, through an interdisciplinary approach, on environmental education concepts throughout the undergraduate program of studies. In addition, provisions for an in-depth course of study should be made available.

2. Environmental Education in Professional Studies: Environmental education to further professional career education should provide adequate preparation for teachers and other professionals whose careers require a knowledge of man's relationship with his environment.

Teacher education should involve preservice and inservice training in environmental education.

A general interdisciplinary course in environmental education should be required for all undergraduate education curricula. Active involvement with real issues should be experienced. A multi-disciplinary environmental science course should be required for science majors in colleges of education. These course requirements, which may involve re-orientation of present courses, represent minimal requirements.

3. Career Education: Training of professionals and technicians for careers dealing with environmental control, environmental law, environmental monitoring, environmental planning, and research and development should be a high priority goal for institutions of higher education.

   Institutions of higher education shall provide seminars and workshops. These should be interdisciplinary in nature and offered for credit on the graduate and undergraduate levels. Inservice programs shall be designed to meet the needs of those teachers, technicians, parents, and other professionals engaged in areas of environmental education pursuits.

   Seminars shall be designed to involve personnel and concepts from all the disciplines in the liberal arts curriculum. Concepts, attitudes, interests, and appreciations relating to the environment should be developed.

   Experiences "beyond the classroom" should be provided. Workshops shall be held at environmental centers and outdoor laboratories. The workshops shall be designed to provide opportunities for the development of skills in a natural setting and for the development and evaluation of ideas, techniques, and materials.

4. Curriculum Materials: Higher education shares in the responsibility for the evaluation of existing materials, as well as the development of new materials in environmental education. Research programs produced by

workshops and summer courses, should be made available. Institutions of higher education should evaluate, prepare, and disseminate materials for use in communities. Resource persons as consultants, directors, and participants in environmental education community programs should be available. Organizations such as Continuing Education Programs, Early Childhood Development Programs, Applied Research Programs, Agricultural Extension Service and Problem-oriented Centers should provide effective environmental education programs.

**Evaluation**

Concurrent with the initiation of the above program, institutions of higher education should begin to develop specific procedures for evaluation of programs. Programs should remain flexible and subject to revision and modification throughout. Specific evaluative criteria should be designed for each program. Evaluation by participants at all levels in the program, i.e., students, professional personnel, and lay persons, should be encouraged. Criteria to be designed should consider increased awareness and knowledge reflected through changed behavioral patterns in attitudes, interests, involvement, and commitment of the individuals, institutions, agencies, organizations, and general public involved.

## PUBLIC AWARENESS

Any decline in the quality of the environment denies individuals and society the opportunity to enjoy and benefit from their surroundings. Public misunderstanding or ignorance about the complexity of the problem contributes to this decline. Few citizens understand how environmental deterioration relates to them as individuals until a specific problem touches them personally. Furthermore, few citizens understand how their present actions will affect later generations.

A program of public awareness should stimulate enough concern in people so that they will **want** to involve themselves in the solution of problems. Many people at the community and state levels have the power to implement various programs. It is important that such leaders be aware of environmental problems and assist in educating the public.

Some ways of stimulating awareness in the total population are cited here.

1. Obtain the most complete and available information from:
   a. Existing governmental agencies
   b. Private organizations, both profit and nonprofit
   c. Colleges and universities, libraries, experiment stations, and study centers.
2. Encourage an expanded program of public awareness through mass media by supplying reliable material to:
   a. Television and radio
   b. Motion pictures
   c. Newspapers
   d. Periodicals (including comics).

3. Furnish the public with various opportunities for understanding and appreciating the environment through:
   a. Outdoor education centers
   b. Media centers
   c. Lectures
   d. Displays at fairs
   e. Workshops in school and community.

4. Make training available in environmental subjects for those leaders who influence groups such as Boy Scouts, Girl Scouts, youth clubs, church and recreation groups, and others.

5. Promote use of existing materials and facilities (films, speakers, exhibits, activities) to inform community groups of their environmental assets and problems.

6. Sponsor field trips such as those sponsored by Audubon Society, Sierra Club, Trails Council, Wildlife and Conservation Associations to observe both good and bad aspects of environmental situations. Involve all segments of the community, including public officials, students, and special interest groups, in planning these activities. Encourage use of public lands such as state parks, national parks, and press for additional as well as more varied public lands to be set aside as provided by law.

7. Encourage participation of concerned, well-informed citizens on committees and boards, both appointed and elected, that are directly involved in decisions that affect environmental quality. Encourage public attendance at all open meetings where environmental decisions may be made.

8. Involve professional associations in becoming more aware of and promoting environmental improvement as it relates to their field. Examples: medical, architectural, landscape, scientific, legal, and technological associations.

9. Involve interested associations in becoming more aware of and promoting environmental improvement as it re-

lates to their field. Examples: businesses, industries, garden clubs, historical societies, and women's clubs.

10. Develop public awareness of the fact that environmental improvement often depends upon legislation, and encourage wide participation in preparing such measures.

11. Participate in specific programs such as Alabama Environmental Quality Council, which seeks to involve citizens at many levels.

## THE ALABAMA ENVIRONMENTAL QUALITY COUNCIL

### History of Council

Alabama's highly recognized efforts had a modest beginning when a group of women from the state's agricultural organization, the Alabama Farm Bureau Federation, became concerned about the garbage and litter problems multiplying rapidly in Alabama, especially in rural areas. The concern was appropriately brought into focus in 1967 when the voting delegates of the Alabama Farm Bureau Federation passed a resolution requesting that a Rural Cleanup Program be observed in the state.

From its inception this environmental movement was steered by an Advisory Committee headed by the Governor as ex-officio chairman and John W. Bloomer, Managing Editor of The Birmingham News, as chairman. Martha McInnis, Program Development Director of the Alabama Farm Bureau Federation, has served as staff coordinator. Within a year the Rural Cleanup Advisory Committee underwent a name change to Alabama Cleanup and Beautification and later the Alabama Advisory Committee for Environmental Quality. A constant effort has been made to involve new members on the Advisory Committee and thus broaden the base of the Alabama Environmental Program. The Alabama Environmental Quality Council is an outgrowth of the Alabama Advisory Committee for Environmental Quality.

### Coordination

The Alabama Environmental Quality Council is the coordinating agency through which citizens, public and private or-

ganizations, state and local governments, and business and industry work together to prevent pollution; to insure clean attractive neighborhoods, highways, parks, lakes, streams, and historic sites; and to foster quality living in general.

Since 1968 the group has met quarterly to project long-range planning and programming efforts to improve Alabama's environment.

**Objectives**

To work for the solution of problems related to man's relationship with his natural and man-made surroundings. This includes the relationship of population, resource allocation and depletion, conservation, transportation, technology, and urban and rural planning to the total environment.

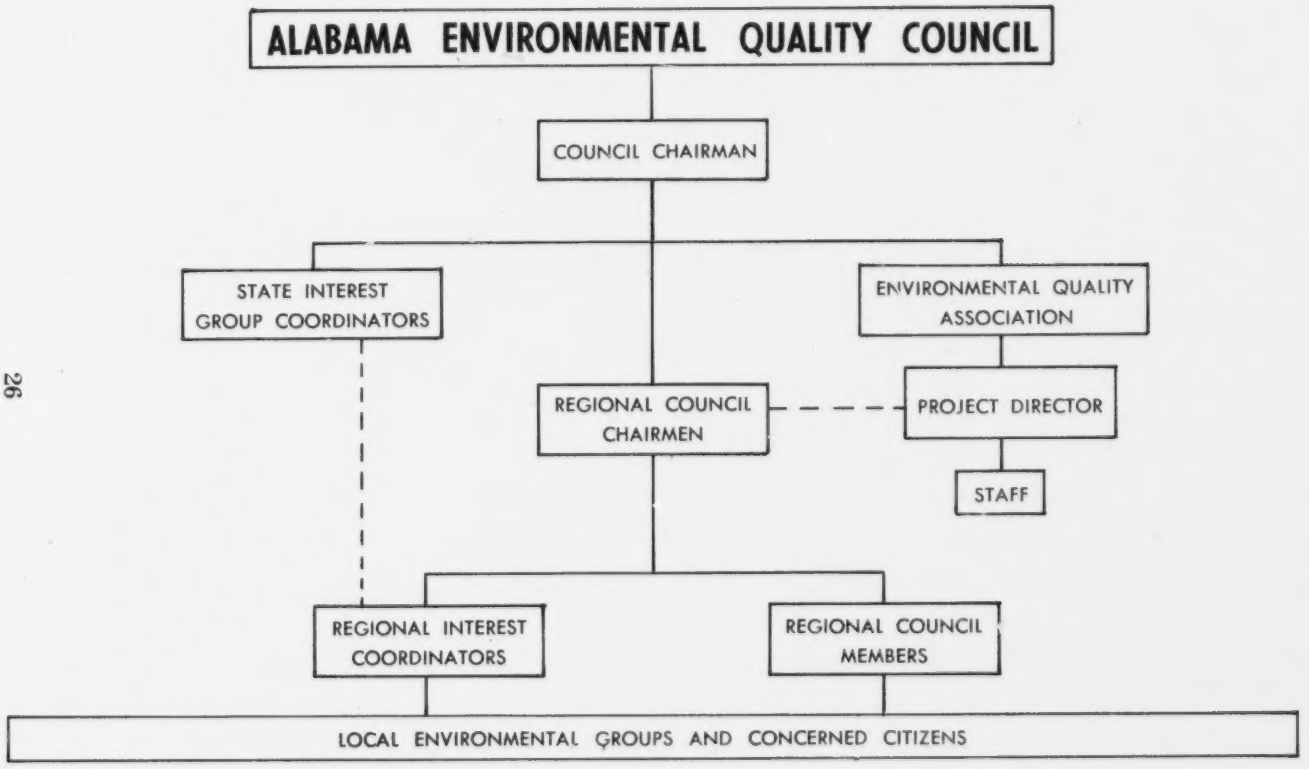
To develop among Alabama residents a pride in their communities and their state and to emphasize the benefits of a clean, healthful, and beautiful state.

To encourage the preservation of Alabama's natural beauty and environment through a program of public education. To encourage and assist in the development of voluntary community improvement through a program of public education.

To promote the establishment of local volunteer environmental quality programs.

The Alabama Environmental Quality Council is structured for the purpose of uniting under one umbrella all the State's resources, agencies, and organizations that are concerned and involved with the environment so that a coordinated course of action may be executed on a statewide basis. Membership of the Council represents leaders from business, industry, education, state agencies, news media, professional and civic organizations. A constant effort is made to involve new members on the Council and thus broaden the base of the Alabama Environmental Program.

Many environmental problems have been solved and solutions found because of the united effort taken by communities in cooperation with the State Council and its members. See organizational chart on next page)

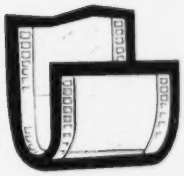

ALABAMA ENVIRONMENTAL QUALITY COUNCIL
COUNCIL CHAIRMAN
STATE INTEREST GROUP COORDINATORS
ENVIRONMENTAL QUALITY ASSOCIATION
REGIONAL COUNCIL CHAIRMEN
PROJECT DIRECTOR
STAFF
REGIONAL INTEREST COORDINATORS
REGIONAL COUNCIL MEMBERS
LOCAL ENVIRONMENTAL GROUPS AND CONCERNED CITIZENS

**Educational and Environmental Value of Program**

The educational and environmental value of the program is reflected by membership on the State Council. The State Superintendent of Education is an active member of the Alabama Environmental Quality Council. Currently, a committee of the Council's members is working with the State Department of Education on curriculum development for environmental education. Members of the Environmental Protection Agency work closely with the program. The overall educational and environmental merit of the program is reflected by the fact that the Alabama Environmental Quality Program received a $43,000 Federal grant from the U. S. Office of Education to develop the Environmental Education Master Plan for Alabama that will be reflective of the needs of all age levels and that will be relevant to the particular needs of every Alabama community.

The Alabama Environmental Quality Council is concerned with far more than just cleanup or beautification. The challenges it sees include all phases of environmental quality: litter, solid waste disposal, pollution of our Alabama streams, pollution of our atmosphere, plus vigorous efforts to maintain and improve the aesthetic attractions of our state.

The basic strength of the Alabama Environmental Quality Council and the reason for its climb to more forcefulness lies simply in more and more involvement of people reaching down into the neighborhoods and the levels of community living in communities both small and large.



# RESOURCES AVAILABLE

To support a statewide program of environmental education in Alabama, certain resources should be made available. The following is a description of resources currently available, with references to some that would be desirable for an inclusive program.

**Human Resources**

Environmental problems are created by people, and people are the most effective resource in solving them. Careful selection of knowledgeable, dedicated people is essential to any environmental education program on the local school level, as well as in the public domain. Anyone dedicated to the preservation of a livable environment, whose education and experience enables him to speak with authority, is a good human resource. Lists should be prepared on a local basis of people in this category who are available for support of educational programs, and provide criteria for evaluating these persons and a means for cataloging the particular area in which they might make contributions.

**Environmental Resources**

Numbers of land ownerships are available for utilization in environmental education. They encompass trail and river systems, aesthetic, scenic, and wild areas and interpretation centers. These ownerships are held by federal, state, multi-county, county, municipal governments, and also industry and private domains.

**Organizational Resources**

Formal organized groups are presently in existence that are capable of contributing human and financial resources. These resources should be utilized to the maximum in developing and implementing environmental education plans. Among the many formal organized groups that can contribute are:

1. Governmental agencies, conservation groups, and trade associations, through the federal, state, county, and municipal levels.
2. Business and commerce, universities and colleges, and service clubs.

**Media Resources**

Modern technology has provided the educator with the capacity to produce and use many effective materials for the attainment of teaching objectives.

Research indicates that although the teaching ideal is real experience with an actual situation, attitudes can be developed, concepts grasped, and facts learned through the use of various instructional media.

These media are classed generally as "print" and "nonprint" materials. The print materials consist of books, magazines, pamphlets, newspapers, and similar materials. Nonprint materials are generally described as "audiovisual," though they might appeal to the senses of touch, taste, and smell.

Categories of commonly used audiovisuals are:

1. Black and white or color slides
2. Filmstrips
3. Overhead transparencies
4. Records
5. Recording tapes
6. Tape cassettes
7. Motion pictures.

Interested persons may obtain materials from commercial companies. In addition, many governmental agencies, as well as trade associations, have excellent materials. Local media centers often have source lists available.

Production of many types of materials is possible through the facilities offered by school or systemwide media centers. In formal types of environmental education media can be produced by the teacher or local system personnel, although local businesses help in certain instances. General use of good materials,

in accordance with sound principles of education, can enhance any program of environmental education.

**Educational Television**

One of the most effective media available to environmentally educate students and the general public is television and radio. Alabama has an educational television system that is recognized as one of the most outstanding systems in the United States. This resource is available for use as an environmental education training tool.

Two approaches should be considered in programming for environmental education. First, a course of study should be designed solely for the students' use in the classroom. This course of study would be directed toward formal or technical training with limited entertainment factors. This type of program would be utilized only within the ETV system.

A second approach to the utilization of the television media would be to develop environmental education programs with high entertainment factors. This type format would be more acceptable to commercial television and would be given consideration for public service programming. The format could also be utilized by ETV and then made available to commercial stations within the State. At this point, adult environmental education would be promoted.

**Financial Resources**

Public

- Grants-in-aid
- Federal, state, local conservation agencies
- Donations by foundations
- Donations by media (public service time)
- Allocations from general tax receipts

School Sources

- Student or parent contributions
- School Board allocations
- Income from fund-raising programs
- Federal matching (and nonmatching) grants

# APPENDIX

## BEAR CREEK PROJECT

The Bear Creek Watershed Environmental Education Project is a cooperative of thirteen school systems in Alabama and Mississippi, representing five counties in Alabama and one county in Mississippi. The goal of the Project is to interject environmental Education into all curriculum areas. This will be done through inservice programs conducted by the director and other qualified persons. Three hours of University credit, undergraduate or graduate, is also being offered through Florence State University for a course entitled "Outdoor Environmental Education." The course uses workshops to train teachers to utilize their own campuses in teaching their particular subject.

A wealth of environmental education materials are made available to the teachers and a variety of resource organizations, such as the National Park Service, Soil Conservation Service, the U. S. Forest Service, and the Tennessee Valley Authority, conduct programs showing how their services can be utilized. Specific lesson plans in mathematics, language arts, social studies, creative arts, physical education, and science are taught by experts in their field. The workshop participants play the role of one of their own students. At Overton Farm on Bear Creek the participants are subjected to the problems of how a primitive environment can also be used to teach environmental education. It is hoped that a resident outdoor education facility to be utilized by teachers and students for week-long educational activities can be constructed.

Workshop participants are provided a resident-type facility during the workshops when they visit the Youth Station at the Land Between the Lakes, a TVA Project. Each participant prepares a ten-lesson plan for trail use and use by other workshop participants.

The enthusiasm of the workshop participants has been overwhelming. They plan, on their own, reunions of their class to discuss the pros and cons of experiences with students on their campuses.

## MOBILE COUNTY OUTDOOR EDUCATION CENTER

The Mobile County School System has set aside approxi-

mately 640 acres of 16th Section land, containing a 19-acre lake, to be used as an outdoor education center. The center is being developed to serve as an outdoor classroom where students and teachers of K-12 have an opportunity to utilize the environment in a study of its components. It is expected that the center will foster growth in other areas, including mathematics, physical education, and health. The areas of study available at the center in its present state are:

a. Identification and classification of plants

b. Collection and identification of animals

c. Identification and classification of soils

d. Measurement of local terrain and map readings

e. Study of influence of environmental changes on plants and animals

f. Study of topographic effects on plant growth and distribution.

A professional forester from the Mobile County Foresters' Office provides technical advice and assistance to any teacher planning outdoor classes. Presently, a partially cleared trail with ten orientation sites is available for use.

## THE FAIRHOPE PROJECT

A public school teacher in Fairhope High School in Baldwin County has a class in biology that has carried out a research program in marine biology in the waters of Mobile Bay. Cooperation and assistance has been provided by biologists of the Marine Environmental Science Consortium faculty on Dauphin Island. A research vessel which was brought to the Fairhope pier has also been helpful. Students were assisted in using scientific equipment, in making collections of organisms, and in learning techniques of scientific observations.

## BALD ROCK PROJECT

The Bald Rock Project was begun by Southern Union State Junior College in the spring of 1970, with the establishment of a one and one-half mile outdoor learning trail, through cooperation of the personnel of the National Park Service at Horseshoe

Bend National Military Park. The project is presently under the direction of two instructors at Southern Union State Junior College.

Bald Rock is a granite outcrop of rock three and one-half miles northwest of Wadley, with characteristics that make it ideal for exploring versatility in the environment. The area supports aquatic, xerophytic, and mesophytic habitats within a radius of approximately eighty acres. Examples of primary and secondary succession and many endemic plant species are very much in evidence. The area has been and is presently used as an outdoor laboratory for science classes and as a recreational area for Wadley and surrounding communities.

The purpose for the establishment of the Bald Rock Environmental Study Trail was to create awareness of and responsibility for the environment in college students, elementary school students, and community members who participated in the project. Actual operation of the trail involves preparation by the college students of interdisciplinary lessons illustrating environmental principles and then teaching these lessons to school students who visit the area.

As a result of the uniqueness of the Bald Rock area and the use made of the site in environmental teaching, the area has been named as a National Environmental Education Landmark (NEEL) site by the Department of Interior. Also evolving from the Bald Rock activities, Southern Union State Junior College received federal funding in 1972 for the writing of "Envirocaps" (capsule environmental lessons), applicable for use at Bald Rock, as well as other outdoor learning sites.

## AUBURN UNIVERSITY PROGRAM

At Auburn University a number of graduate and faculty research programs, many funded by various Federal agencies, have been conducted in the broad area of environmental concerns. One example is the project in the Management Department of the Business School aimed at determining the Economic Effects of Water Pollution Abatement in Three Industries in Alabama. The Economics and Accounting Departments have conducted projects in social accounting and cost-benefit analysis. The Engineering and Agriculture Schools have a number of

research projects in several areas. Courses include an interdisciplinary undergraduate course dealing with the measuring of environmental quality and another one on environmental health.

## UNIVERSITY OF ALABAMA AT HUNTSVILLE ENVIRONMENTAL SCIENCES PROGRAM

The University of Alabama in Huntsville is developing an environmental science program emphasis within the traditional major at the undergraduate level, with the prospect of developing a graduate program in this area. This curriculum, with the Director of the Center for Environmental Studies acting as a catalyst, will consist of a core of required courses for all environmental scientists. Upon completion of the required courses the student will choose an environment emphasis option offered within the traditional major field, such as engineering, physics, chemistry, and biology.

The implementation of an environmental education program in K-12 curriculum will eventually result in an informed public; however, this same result can be achieved more quickly through a parallel program of adult education. Environmental information is currently being formally disseminated through workshops, seminars, lectures, conferences, symposia, exhibits, and noncredit courses at universities and community centers. These instructional vehicles are sponsored by a wide variety of organizations including private industry, environmental groups, service clubs, and governmental agencies. The public is also being provided with environmental information through less formal means, such as service club programs, government publications, and public service announcements and programs in the various communications media. The continuation of these means is to be encouraged concurrent with the implementation of any plan of academic instruction.

## UNIVERSITY OF MONTEVALLO ENVIRONMENTAL EDUCATION CENTER

In June of 1967, the Selma City Board of Education was awarded a planning grant under P.L. 89-10, Title III. The purpose of this grant was to plan an environmental education

development center to be located at the lake area on the campus of the University of Montevallo. The planning was completed in August, 1967, under the direction of two faculty members from the Department of Health, Physical Education, and Recreation of the University of Montevallo (then Alabama College). A summary of the planning for this project is as follows:

A. Four one-day sessions for the purpose of planning the learning experiences of children in grades K-12, college specialists, school administrators, and project staff planning committee met during the months of July and August, 1967.

   1. Through the guidance and leadership of several departmental chairmen from the University campus, professional specialists from the State Department of Education made presentations and led discussions during the project sessions.

   2. The State Department of Conservation and Natural Resources made available the services of two of its conservation specialists.

   3. The Shelby County Highway Department provided machinery in preliminary grading and clearing around the existing camphouse. A survey team made evaluation layouts of the area for the architect's use in a plan to remodel the existing camphouse building.

   4. Teachers and curriculum specialists met in small groups to plan specific experiences of observing and learning in the out-of-doors.

B. College specialists in physical education, outdoor education, elementary education, secondary education, science, conservation, music, speech, mathematics, art, English, and home economics served as consultants to teachers at the outdoor education facility for planning specific outdoor experiences. Specialists complemented the regular school curriculum. In addition, two visiting week-end workshops were held at the proposed outdoor education center to plan for the enrichment program.

   1. Planning committee (composed of specialists, teachers, school administrators, and consultants from the State

Departments of Education and Conservation and Natural Resources) met with interested departmental chairmen of the University of Montevallo faculty and reviewed possibilities of combining listening experiences and observing performances in all aspects of the curriculum.

2. The planning committee developed criteria for evaluating the outdoor education program.

Partially as a result of the planning project of 1967, and the enthusiasm generated for this educational approach, the University of Montevallo was awarded an educational grant from the Alabama State Department of Education to provide a two-week outdoor education workshop offering graduate and undergraduate credit during the summer of 1968. The workshop was presented on an interdisciplinary basis designed to provide insight and experience for teachers, supervisors, and specialists of the various grade levels of the school. As a result, a permanent graduate and undergraduate course developing creativity in the out-of-doors was approved and offered at the University of Montevallo in the Department of Health, Physical Education, and Recreation. Its purpose is to stress the contribution to the child's creativity through exploration, discovery, and direct experience utilizing the natural environment as a learning laboratory through physical education activities. This course has been offered every year since the summer term of 1969.

C. The University of Montevallo will provide planning consultants, specialists, instruction, and facilities under contract for many aspects of the Center Project. The facilities and grounds for environmental education consist of seventy-five acres and a lake of twenty-eight acres. The lake has been stocked with fish and is available for fishing and boating. Existing facilities include a concrete boat dock, two boat houses with nine canoes, and two large camp lodges with paved access road. One lodge contains a large living room with a large fireplace in the center of the room. The densely wooded areas surrounding the lodge and the lake contain a variety of wild flowers, bushes, and trees. Maximum use of this natural environment as a learning laboratory is envisioned.

## ENVIRONMENTAL EDUCATION CONFERENCE

An annual conference on environmental problems is sponsored by Auburn University, Auburn, Alabama. It involves representatives from industry, education, conservation, agriculture, as well as individuals and groups interested in environmental protection and quality. The program is presented by a group of knowledgeable people in environmental problems who make an effort to bring the participants up to date on policies, programs, legislation, and research. Past conferences have been well attended and have proved helpful in the understanding of controversial environmental problems.

## PRESIDENT'S ENVIRONMENTAL MERIT AWARDS PROGRAM

The President's Environmental Merit Awards Program is excellent if organized and carried through as suggested. Its emphasis is (1) planning, (2) preservation, (3) control, and (4) restoration. Guidelines are provided for the purpose of imbuing every subject in the school curriculum with environmental orientation, and to also encourage students to use their own communities as living laboratories.

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## MARINE ENVIRONMENTAL SCIENCES CONSORTIUM PROGRAM

The Marine Environmental Sciences Consortium, Inc., (MESC) was created by the Alabama Legislature as a nonprofit corporation under Title Ten of the 1960 Code of Alabama as amended. MESC came into existence officially October 1, 1972.

During the development of the Consortium organization the U. S. Air Force Radar Base on Dauphin Island was declared surplus to federal needs and subsequently deeded to the Consortium. Permission to occupy the base was granted during the last week of May, 1972, and summer marine science classes began there June 12 after only three weeks of renovation. One

hundred and fifteen students attended classes at the Dauphin Island Sea Lab during the 10-week summer program.

Activities following the 1972 summer program have consisted of a number of workshops, meetings of the operating committees, and field trips on a weekly basis conducted in support of the State's high school and college instructional programs. The Alabama Geological Society conducted a three-day field trip from the Sea Lab in December, 1972, (90 participants) and a January Interterm is now being conducted with eighteen students enrolled in the undergraduate ocean science course. Marine biology will be offered in the May Interterm prior to the 1973 summer program. In addition, two one-week short courses organized by the University of Alabama in Birmingham will be conducted the week before and the week following the summer term.

**Consortium Organization**

The Consortium is managed by a Board of Directors consisting of the Presidents of the seventeen member schools. Under the Board of Directors is an Executive Committee consisting of nine members appointed by their respective Presidents which handles most of the routine operation of the Consortium. This is done primarily through the Office of the Coordinator, who is secretary and ex-officio member of the Executive Committee. The Program Committee has seventeen scientific members appointed from each of the member schools. Their function is to recommend program, course structure, content and organizational activities, and goals.

**Consortium Facilities**

Consortium activities are centered around the Dauphin Island Sea Lab, the Point Aux Pins Marsh Lab and the vessel maintenance facility at Bayou La Batre. There are thirty-three buildings and one diver training pool at the Dauphin Island Sea Lab that belongs to the Consortium. The primary buildings are Marine Science Hall (7700 sq. ft.), the Administrative and Recreation Building (4500 sq. ft.), a Cafeteria, two 2-story dormitories, one 2-story apartment building and thirteen three-bedroom family houses. All laboratories, classrooms, and the library are housed in Marine Science Hall. Each of the two

dormitories houses eighty-four single students. The apartment building can accommodate thirteen married couples. Total number of enrolled students that can be given living accommodations at any one time is about 200 students. MESC holds title to thirty acres of land on Dauphin Island.

Three marine vessels owned by the University of Alabama are kept at Bayou La Batre. These are used for field trips and research. They consist of a sixty-five-foot steel vessel, a thirty-six-foot tunnel-sterned wood vessel, and a twenty-three-foot fiberglass inboard-outdrive deep-V-hulled vessel. All are diesel powered. The Marsh Lab is owned by the University of Alabama and consists of about 250 acres of marsh and pine forest surrounded by some of the most productive and pollution-free water on the Gulf Coast. Having facilities at the Marsh Lab and Sea Lab sites makes the Consortium one of the most unique complexes in the northern Gulf of Mexico. No other state has free access and control over so many diverse environments for conducting daily course work and research.

**Instruction Programs**

In accordance with the enabling act creating the Consortium, the primary purpose of MESC is to centralize all of Alabama's instructional, research, and service activities related to the marine sciences on Dauphin Island. Therefore, it is planned that the Consortium will have a role in conducting education in marine related subjects for the State's universities and colleges, high schools, and at the trade school level. It is expected that this will save Alabama considerable expenditure by centralizing all marine activities at one location.

The Consortium presently plans to offer a full term of course work at the college level year around beginning in July, 1973. This depends, of course, on adequate staffing. Most of the marine laboratories in the Gulf of Mexico area and elsewhere are heavily oriented towards graduate programs in marine science or oceanography. These programs are usually entered by students who have no prior experience in marine subjects, causing them to lose a good deal of time picking up background information and experience. There is a need for undergraduate programs which will prepare students to enter marine

science graduate programs or gain the necessary background to work in areas related to marine science. Such a curriculum is essentially an environmental program and will broaden a student's outlook with respect to human ecology and his surroundings, at the same time providing him with the same professional tools he would develop in any related program. He would also have the advantage of gaining diversified experiences away from his college campus and home environments.

Graduate programs in marine science are necessary to prepare Alabama's young people for a future in this expanding field. Presently, Alabama students must leave the state to receive graduate degree education in marine science. This is usually an expensive proposition and could keep some potentially good people out of the profession.

At the high school level the Consortium provides consultants to two oceanography courses being taught in the Mobile high schools. In addition, field trips are provided for the students twice a year. Plans are to move this program to the inland high schools and provide field trips and consulting services on a year-round basis.

Work is progressing with the Mobile Area Community Action Commission to develop a series of training programs in the marine trades. These people would be utilized, as a part of their training, as an adjunt labor source in other MESC programs. Some of the subjects offered would include marine welding, marine electrical repair and installation, net making and mending, shrimp boat operation, commercial diving, marine cookery, and environmental monitoring. All of the funding for this program would come from outside sources.

**Research and Service Programs**

Research for and service to the State of Alabama are almost inseparable. Teaching is, of course, also an intimate part of these two functions. The Consortium is visualized as a concentration of talents at one place which can provide the means to develop the State's marine resources and to participate in the management of the coastal zone region.

The "marine revolution" — or the extension of the Indus-

trial Revolution into the depth of the oceans — is a reality that is being thrust upon the State of Alabama. In particular, we are now faced with the prospect of a superport off the Gulf of Mexico shores. There is a reasonable possibility that it may be located near Alabama and Mississippi. Late in 1972 the State realized that it needed immediate advice and knowledge concerning the environmental aspects of a superport off the Alabama coast. MESC was subsequently named environmental agency for the Ameriport concept. In a short two months the Consortium put together a report for the northeastern Gulf of Mexico. The State needs a body of professionals that can respond in just this way to meet its requirements in the marine environment. Further, there is a more urgent necessity for an agency which can plan for and anticipate future problems so they can be met in an organized manner and not dealt with as recurring emergencies.

The Consortium is ideally suited for this kind of activity. As a general policy all research and service activities could provide opportunity for particular scientists in the member schools to participate along with resident scientists. This would allow utilization of specialities not available from the Consortium resident faculty. The resident faculty would act as a focal point for the tailoring of research teams to handle particular problems. All activities would be devoted to promoting the economical and social well-being of the State.

Some programs have already begun to a limited degree. In the fall of 1972 Alabama and Mississippi, as a result of Consortium efforts, joined in the first two-state Seal Grant program. This program, as announced by the two governors, attracted considerable attention in Washington, prompting President Nixon to send his personal representative to the announcement ceremonies in Biloxi, Mississippi. Total funding for the two states this year was over $400,000.

Other activities the Consortium is involved in include The Earth Resources Technological Satellite Program for monitoring Alabama resources and pollution; continuing Ameriport studies; generation of environmental impact statements for the U. S. Corps of Engineers; effects of dredging on marine environments, Corps of Engineers; remote monitoring of marine

waters, Earth Resources Lab, Houston, Texas; effects of sediment discharge from maintenance dredges, Corps of Engineers; use of dredge soil to build new marshes, Corps of Engineers; pesticide monitoring in marine animals, Environmental Protection Agency; the several projects involved in the Sea Grant Program, which includes finding a new standard for oyster health laws, developing an Alabama lobster industry, providing a marine extension program through the Auburn University Agricultural Extension program and a diver training program using manned habitats and submersibles; helping the State to develop a Coastal Zone Management Program; assisting in the planning for a marine resources council; and publishing a Journal of Marine Science and a newsletter.

## PROPOSED ENVIRONMENTAL CENTER ALABAMA AGRICULTURAL AND MECHANICAL UNIVERSITY

**Normal, Alabama**

The plan is to develop an environmental education center at Alabama Agricultural and Mechanical University. Facilities and land will be made available for such studies as: Christmas trees, superior seedlings, nature trails, natural forest stand areas, arboretum, forest management studies, and others. Also, the center will be used as an experimental base for long-term experiments designed to delineate the effects of agriculture and its related practices on environmental quality and to conduct long-term interdisciplinary studies to determine the effects of agricultural chemicals, cultural practices and types of crops on associated soils, water resources, and plant and animal life. The scientific data collected, as well as the facilities, will be made available to all educational groups and others interested in the information. Short courses of one-day to three months' duration will be conducted on conservation, ecology, pollution, and other environmental problems. This will enable the center to assist a wide variety of individuals and groups in acquiring technical knowledge based on environmental research.

A forester, employed by the Alabama Forestry Commission, but on leave to Alabama Agricultural and Mechanical University, will coordinate the activities in the formation and operation of the center. The expertise of other agencies, including agricul-

ture and government, will be utilized. The potential recipients of this environmental training will include all school age levels and postgraduates.

## ENVIRONMENTAL TRAINING SESSIONS

In October of 1972 a training session for supervisors of instruction was held at Ann Jordan Lodge in Tallapoosa County, Alabama. The State Department of Education, with the help of consultants from the U. S. Forest Service, worked with thirty supervisors from local school systems. They became acquainted with a new and effective method of environmental education training. The method was developed in another region and has been enthusiastically accepted by resource managers and educators wherever it has been presented.

The objective and outline for the training are exciting. The approach is based on field involvement of the trainees in environmental investigations. Evaluation sheets revealed that the method was most successful and would be helpful to teachers in the various sciences.

## ALABAMA FORESTRY ASSOCIATION CONSERVATION WORKSHOP

The workshop sponsored by the Alabama Forestry Association is held each summer at Auburn University. Approximately thirty upper elementary and high school science and social studies teachers attend each year. The teachers are given many experiences related to conservation and environmental concepts. They are introduced to new methods and techniques of teaching and become acquainted with modern and informative materials Field trips are included in the experiences.

Authorities and consultants throughout Alabama and the South are brought to Auburn to assist in the one-week workshop. Cost of the workshop is underwritten by donations from members of the Alabama Forestry Association. Consultants from the State Department of Education assist in planning and organizing the workshop as well as serving as instructors when needed. Plans are underway to expand the workshop activities and to lengthen the time in order that participants may receive college credit.

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